BEOCENTER 1400

BANG & OLUFSEN

We congratulate you on your new Beocenter 1400. You have become the owner of a modern stereo tuner/amplifier and cassette tape recorder of high quality in both styling and engineering.

Your Beocenter 1400 offers you radio reception on FM and medium and long wavebands. The tuning indicator light is double-acting on FM, ensuring very precise tuning.

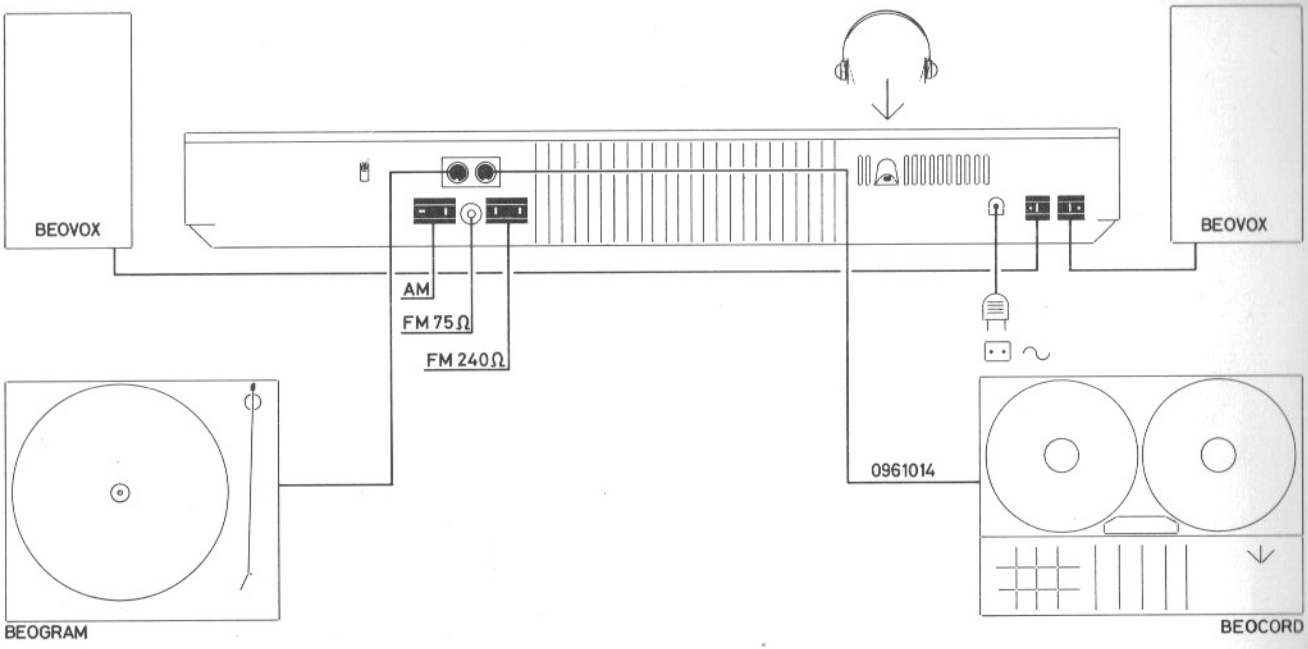
The amplifier section uses a new type of integrated Darlington output stage that is capable of delivering 20 watts r.m.s. per channel at very low distortion, less than 0.5 %.

The stereo cassette tape recorder has a wide frequency range and a fine signal-to-noise ratio, and you may use either low-noise chromium dioxide tapes or conventional low-noise tapes. It has long-life tape heads and indicator lights for both normal recording level and overdriving.

Your Beocenter 1400 has all necessary connector sockets: for speakers, turntable unit and headphones and for transfer between an external tape recorder and a cassette.

Even if your Beocenter 1400 is simple to operate we nevertheless advise you to spend a little time studying these directions. The various facilities of a stereo system can best be utilized if you understand them, and we feel it our responsibility to assist you in realizing the full benefit of your Beocenter 1400.

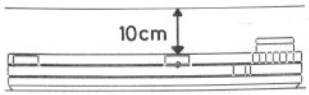
Faithfully Yours,
Bang & Olufsen



SETTING UP

Your Beocenter 1400 has connector sockets for:

Two speakers
FM aerial
AM aerial
Turntable unit
Headphones
External tape recorder.



Your Beocenter 1400 occupies so little space that you can easily fit it into a shelf system. At least 10 cm (4 in.) of free space should be provided above the set to permit easy insertion of tape cassettes.

This amount of clearance will also allow the heat generated by the heat sink at the rear to disperse properly.

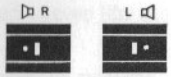
Avoid placing your Beocenter 1400 directly above a radiator, where the temperature is considerably higher than in the rest of the room.

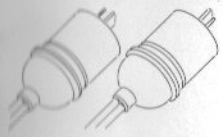
Speakers

The following types of speakers are recommended for use with your Beocenter 1400:

Beovox 1702
Beovox 1802
Beovox 2702.

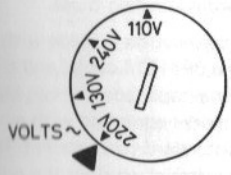
These three types are designed with the Beocenter 1400 in mind and are matched to its amplifier. They differ from each other in tone quality and in physical dimensions.



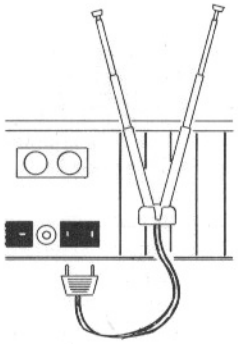


The speakers plug into the two rear-wall sockets marked with these symbols. Left speaker into L and right speaker into R.

Mains Voltage



Your Beocenter 1400 is switchable between mains voltages of 110, 130, 220 and 240 volts AC, 50 Hz. The switch is located on the bottom of the set and can be turned with a coin. As supplied to you, the set is switched to 220 volts, and if this is your local mains voltage you may directly plug the mains lead into a wall socket. Otherwise, this switch must be altered to correspond with your local voltage BEFORE connection to the mains.



FM Aerial

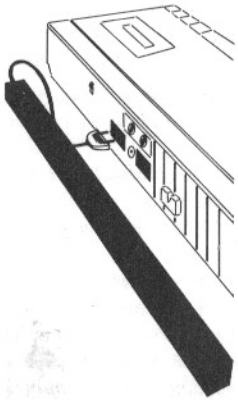
If you live near an FM broadcasting station you may use a type 8902010 FM indoor aerial. On the back of the set is a holder into which this indoor aerial may be inserted, and the short cable is plugged into the socket marked 240 ohms.

Such an aerial has its limitations, and if you find it difficult to obtain noise-free FM reception or want to be able to receive distant FM stations also, you will have to install a more efficient aerial system.

FM stereo reception in order to be noise-free requires an incoming signal that is approx. ten times stronger than in the case of mono reception from the same FM station. Discuss this with your dealer; he knows local conditions and can advise you.

Your Beocenter 1400 has connector sockets for both 75-ohm and 240-ohm aerial systems.

AM Aerial



An FM aerial connected to your set, whether a B&O type 8902010 indoor aerial or a large aerial system, will also provide reception of stations on the long-wave and medium-wave bands because the FM and AM sockets are connected together inside the set. However, you should not expect your FM aerial to provide noise-free reception of any but the strongest stations.

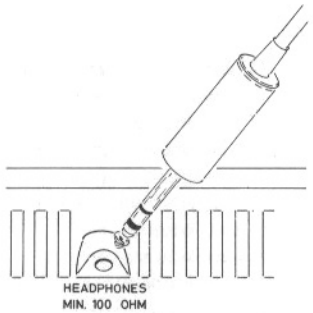
Better reception will be obtained with a B&O AM AERIAL FA 1, type 8920223. This is a ferrite indoor aerial with a short length of cable which plugs into the AM socket.

A small switch has LW and MW positions for long and medium waves, respectively.
The aerial should be placed in a horizontal position and rotated for minimum noise.

If you live in a neighbourhood where there is a good deal of electrical noise, and if you want to receive distant stations, you will have to install an outdoor aerial consisting of 10 - 15 metres (30 - 45 ft.) of wire suspended high up and in the clear, and using a short length of wire for earth connection. This aerial should be plugged into the socket marked AM, thereby automatically disconnecting the FM aerial.

Community Aerial

A good community aerial for both FM and AM will be a good solution for your Beocenter 1400.



Headphones

A pair of headphones may be plugged into the HEADPHONES socket which is located on the back at an oblique angle so that you will not have to move the set forward to plug in headphones. The speakers switch off automatically as you insert the plug.

The headphones should have at least 100 ohms impedance.

NOTE: It is possible to connect headphones of lower impedance than 100 ohms as the plugs are identical.
However, you are warned not to do this because you will get louder volume, with consequent greater risk off ear damage and overloading the headphones.

Min. 100 ohm

Turntable Unit

A stereo turntable unit such as the Beogram 1202 should be plugged into the PHONO socket.

Your Beocenter 1400 is intended for use with a low-impedance stereo pickup.

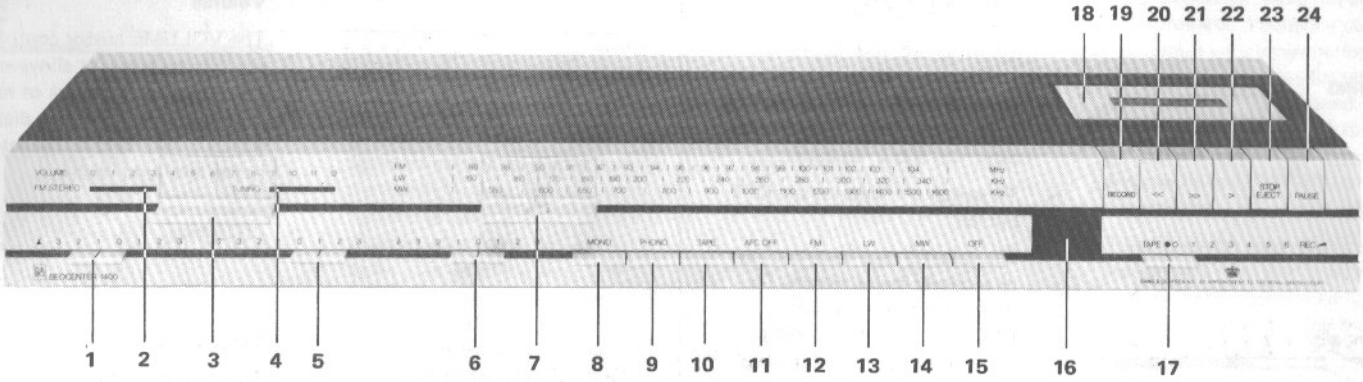
If you want to use a turntable unit which has high-impedance input, either with a crystal pickup or with a built-in preamplifier, a minor modification will have to be made inside the set.

Leave this to your dealer.

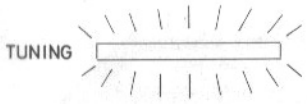
External Tape Recorder

The TAPE socket is intended for an external tape recorder which may be used for copying tapes or for simultaneous recording on two tapes.

The connection is made with a type 0961014 cable, and the external tape recorder can be any model equipped with a DIN-standard radio socket. It is immaterial whether the recorder is for tape cassettes or for reels and whether it has an output amplifier or not.



1	▲	Balance control
2	FM STEREO	FM stereo indicator light
3	VOLUME	Volume-control cursor
4	TUNING	Tuning indicator light
5	𝄢	Bass control
6	𝄞	Treble control
7		Cursor tuning control
8	MONO	Mono/stereo switch
9	PHONO	Turntable unit selection
10	TAPE	Tape playback
11	AFC	FM automatic frequency control
12	FM	FM band selection
13	LW	Long-wave band selection
14	MW	Medium-wave band selection
15	OFF	Off switch
16		Tape recorder indicator light
17	TAPE REC	Recording level control
18		Cassette holder
19	RECORD	Record
20	<<	Rewind
21	>>	Fast forward
22	>	Forward
23	STOP EJECT	Cassette holder stop and eject
24	PAUSE	Pause

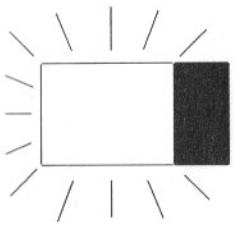


OPERATION

To switch on your Beocenter 1400 depress either the FM, LW, MW, PHONO or TAPE button, and the TUNING indicator will show red light.

To switch off, depress the OFF button.

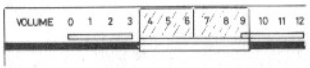
The cassette tape recorder has its separate mains switch. To switch on, move the TAPE REC slide knob to the right until the green indicator lamp shows light.



To switch off the tape recorder, move the slide knob all the way to the left. It is suggested that you always switch off the tape recorder section while listening to a radio programme or record, in order to avoid unnecessary wear of mechanical parts of the tape recorder.

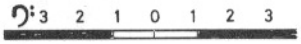
Speakers or Headphones

The two speakers will reproduce the sound as long as headphones are not connected. When the headphone plug is inserted, the two speakers will switch off automatically.



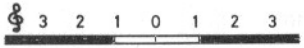
Volume

The VOLUME cursor controls the volume level for all wave bands and for playback of records and tapes. The long dial makes it easy to select exactly the level you wish.



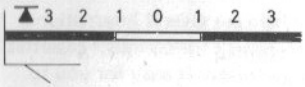
Deep Notes

The slide knob with this symbol controls the deep notes relative to the mid-range and high notes. The mid-scale setting, 0, may be regarded as the normal setting; towards the right the deep notes are accentuated. When the knob is moved towards the left, the deep notes are attenuated.



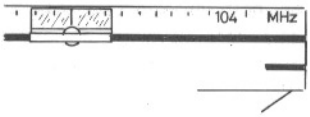
High Notes

The slide knob with this symbol controls the high notes relative to the deep and mid-range notes. The normal setting is in the middle, at 0; towards the right the high notes are accentuated. When the knob is moved towards the left, the high notes are attenuated.



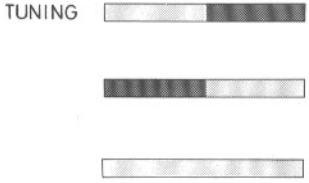
Balance

The relative strengths of the left and right sound channels are adjusted with the slide knob carrying this symbol. This may be necessary if the two stereo speakers cannot be placed symmetrically in your room. Listen to a mono programme from the place in your room you expect to be your listening area. The correct setting is where you feel the sound to be coming from a point directly in front of the listening area.

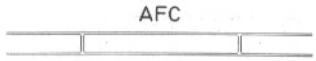


FM Stations

To listen to an FM programme, depress the FM button and slide the large cursor to the place on the dial where the desired station is located. The dial has divisions in MHz but no station names as these depend on your geographical location.
The cursor has a circular vernier control which enables you to tune in "spot-on".

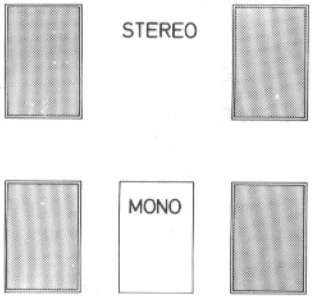


The double-acting TUNING indicator light is an additional aid during tuning: the two red lights will be of equal strength when a station is properly tuned in. If one light is stronger, the tuning is not accurate.



Your Beocenter 1400 has an FM automatic frequency control circuit which can perform final, accurate tuning for you and keep the station tuned. This feature becomes operative on depressing the AFC button and can be switched off by pressing the AFC button again.

When listening to a weak FM station you may find it an advantage not to use the AFC feature – that is, leaving the AFC button released.



FM Stereo

When the FM station you have tuned in is transmitting a stereo programme, this will be indicated by another indicator light, FM-STEREO, and the programme will automatically be reproduced as stereo. With the MONO button depressed you will get single-channel reproduction, but the FM-STEREO indicator will show light as long as an FM stereo programme is being received.
If FM stereo reproduction is interfered with by hiss and noise which disappears on pressing the MONO button it is an indication that the signal from your FM aerial is not strong enough.

LW

Long-wave Stations

Depress the LW button and tune in the desired station, using the cursor tuning control. The TUNING indicator light shows maximum brilliance when a station is properly tuned in.

MW

Medium-wave Stations

Depress the MW button and tune in the desired station, using the cursor tuning control. The TUNING indicator light shows maximum brilliance when a station is properly tuned in.

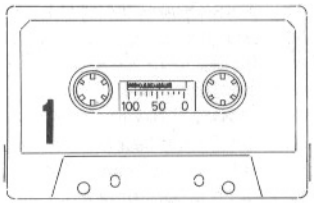
PHONO

Playing Records

To play records, depress the PHONO button. The volume, tone and balance controls function as during radio reception.

MONO

Depressing the MONO button will cause the left and right channels of a stereo record to be added together for mono reproduction.



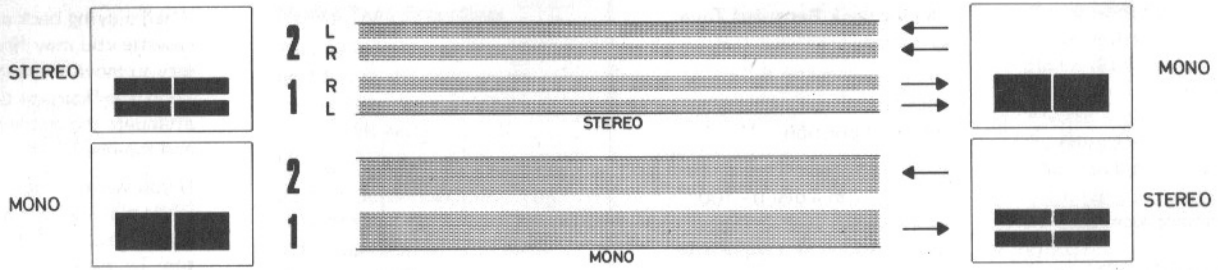
Compact Cassettes

There are several international standards for compact cassettes. This makes it easy for you to operate a cassette tape recorder.

For Beocenter 1400 it is recommended to use tape cassettes with the following designations and playing times:

C 60 2 X 30 min.
C 90 2 X 45 min.

Tape speed is the same in all cases, 4.75 cm/sec.
The tape head system, and hence the placement of the tracks on the tape, is devised to permit changing back and forth between mono and stereo, both recordings and sets.



This sketch illustrates the compatibility of the system. To the left are shown the tape heads for stereo and mono during recording, and the placement of the magnetic tracks on the tape will be seen in the middle. 1 and 2 represent the two sides of the tape cassette, and L and R mean the left and right channels, respectively.
To the right, things are reversed, at the top in such a manner that a stereo recording is assumed to be played back on a mono set, usually a battery-powered portable model. The left and right channels will both be played back simultaneously. At the bottom is shown that a mono recording will pass through both channels of a stereo tape head, and the same sound will be heard in both speakers.

The tape recorder of your Beocenter 1400 has a stereo tape head.

LOW NOISE CHROMDIOXID

CrO_2
TAPE TYPE
NORMAL

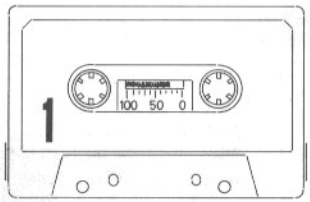
A mono programme, such as a radio broadcast, will be recorded on both tape tracks, L and R.

The actual tape is available in several types: normal low-noise tapes and chromium-dioxide tapes. Chromium dioxide or CrO_2 denotes a magnetisable coating that accentuates the treble and improves the signal-to-noise ratio. This means a greater difference between the strength of the desired sound and that of the unwanted hiss.

Your Beocenter 1400 is intended for both types of tape, and a switch designated TAPE TYPE on the back of the cabinet has two positions, CrO_2 for chromium dioxide and NORMAL for normal low-noise tapes. This switch should be in the correct position during recording but has no effect during playback.

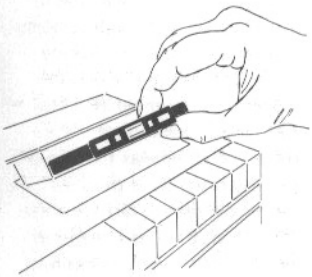
Playing Back Recorded Tape Cassettes

Depress the TAPE button, with both mains switches in the "on" position.

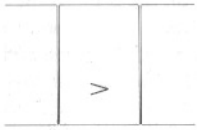


Each tape cassette has a small window with a dial 0 - 100 which shows you how the tape is wound at any particular time.

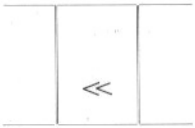
It looks like this when a cassette is ready to start right from the beginning on side No. 1.



To open the cassette holder, press the EJECT button. Insert a tape cassette; the apertures for the tape proper should face outward, and the figure 1 upward. Press the cassette firmly home and shut down the holder.

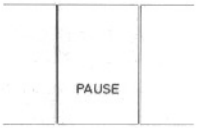


To start playing, depress the "forward" button which has this symbol.



If rewinding is required first, depress this button.

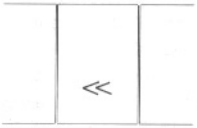
Volume, tone and balance are adjusted as for radio reception. Stereo recordings will be reproduced as stereo, and mono recordings as mono. Only depress the MONO button when you wish to listen to a stereo programme as a single channel.



When playing back a Dolby cassette you may find it necessary to move the treble slide knob one figure to the left to attenuate the treble response and the hiss.

If you want to make a pause while playing back a programme, depress the PAUSE button. To release the button, press it again.

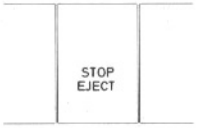
To stop playback, press the STOP EJECT button.



Rewinding, to repeat a passage or the entire tape, is started by depressing the button carrying this symbol.

Fast forward tape transport to a subsequent passage is started by depressing this button.

The STOP EJECT button should be used when a cassette has been finished, both after normal forward tape transport and after fast forward or rewind.



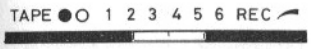
To take out the tape cassette, press the STOP - EJECT button again. You may now turn the cassette over to play side No. 2, or you may change to another cassette.

Making Tape Recordings

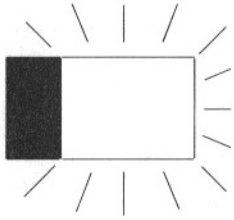
Tune or switch your Beocenter 1400 to the programme you want to tape: FM, LW, MW or PHONO.

Set the TAPE TYPE switch on the back to the position, CrO_2 or NORMAL, corresponding to the tape you want to use for the recording.

Insert the tape cassette in the cassette holder and shut down the holder.

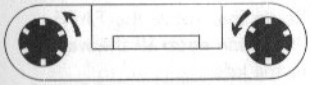


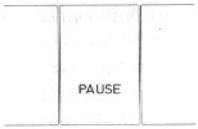
Set the correct recording level before starting the tape. Depress the RECORD button and adjust recording level with the TAPE REC slide knob while watching the indicator light. The green light should flash clearly whereas the red light should flash only briefly on loud passages. If the red sector shows light all the time, the recording will be too loud and distorted. And conversely, if a programme is recorded at too low a level, subsequent playback will be weak and interfered with by hiss.



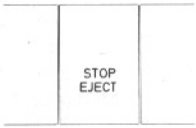
When you are ready to start recording, depress the "forward" button whilst keeping the RECORD button depressed.

Note how much playing time is available on the tape when you start recording so that you will avoid the tape stopping before the recording has been completed. Tape movement can be watched through the window in the cassette holder. Recording is in progress as long as the two toothed rims are revolving.



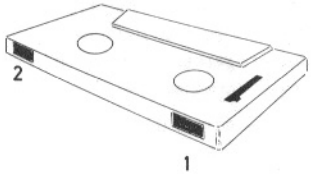


If you want to introduce a pause in the recording, for instance during the announcer's commentary, depress the PAUSE button.
To release the button, press it again, and the recording will continue.
To stop recording, press STOP EJECT.
When you have finished recording one side of the cassette you may take the cassette out and turn it over and thereafter continue making recordings on the other side.

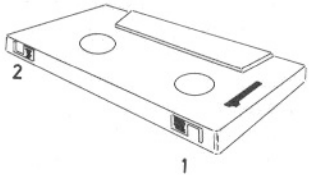


Protection of Recordings

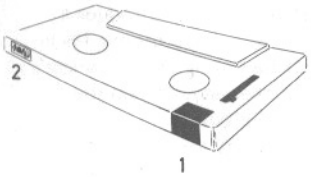
Recorded tapes are protected against inadvertent erasure. The rear edge of the tape cassette has two apertures, one for each of the two sides of the cassette, 1 and 2. A stop device in the Beocenter 1400 ensures that the RECORD button cannot be depressed when a recorded tape is inserted.



On an unrecorded tape cassette, these apertures are closed by a tongue enabling the RECORD button to be operated.



If you have made a recording that you want to preserve you can secure it by breaking off the small tongue, or both of them if you want to preserve both sides, 1 and 2.



Conversely, you can cancel the protection if you want to make a new recording on an already recorded tape. To do this, cover up the aperture with a piece of adhesive tape and proceed as for an unrecorded tape.

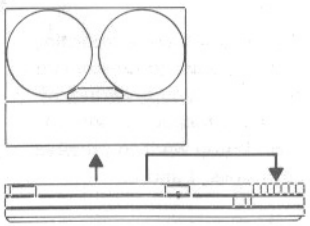
With aperture: Protected against erasure and new recording.

Closed: A new recording may be made.

Two Tape Recorders

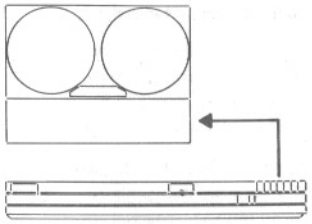
Your Beocenter 1400 has a socket for an external tape recorder so that you may actually operate two tape recorders at the same time.

This gives you the following alternatives:



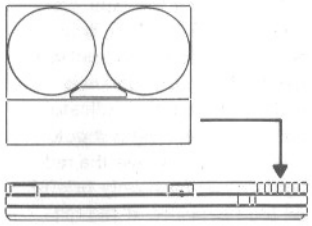
(1) Simultaneous recording on two tapes from a radio programme or gramophone record.

Operate the two tape recorders as for normal recording. Set the built-in one as described above under "Making Tape Recordings". The external tape recorder should be operated as described in its instruction manual for recording from a radio set.



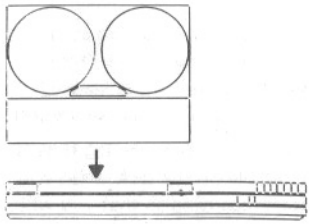
(2) Copying from the tape cassette to the external tape recorder, for instance a reel tape recorder.

Insert the "original" tape cassette in the Beocenter 1400 as described above under "Playing Back Recorded Tape Cassettes" and operate the external tape recorder as for recording a radio programme. While setting the controls of the two tape recorders in preparation for making the recording it is advisable to use the PAUSE buttons of both recorders.



(3) Copying from the external tape recorder, for instance a reel tape recorder, to the inserted tape cassette.

Place the "original tape" on the external tape recorder and operate the latter as for playback. Insert an unrecorded tape cassette in your Beocenter 1400, which should be operated as described above under "Making Tape Recordings", and use the PAUSE buttons of the two tape recorders while making the necessary preparations.



(4) Playing back from the external tape recorder through the amplifier of your Beocenter 1400.

To play back tapes from the external tape recorder, set the latter to playback and depress the TAPE pushbutton of your Beocenter 1400. Volume and tone are adjusted as for radio reception.
The built-in cassette tape recorder should be switched off. To do this, move the TAPE REC slide knob all the way to the left.

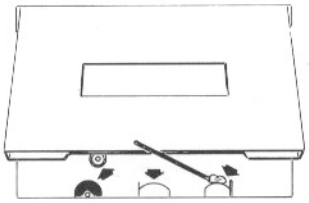
MAINTENANCE

The external surfaces of your Beocenter 1400 can normally be kept clean with a dry cloth. Any grease spots can be removed with a soft cloth moistened with a cold or lukewarm solution of detergent in water, followed by thorough drying with a dry cloth.

Front panel. Use a soft cloth moistened with a lukewarm solution of detergent in water. Use of alcohol is inadvisable as this may cause damage to the transparent portions of the cursors.

Teak and rosewood cabinets. If the cabinet surfaces seem grey and dry you may apply a thin film of teak or rosewood oil but not more than once or twice a year. Use a thin grade of oil, especially for rosewood.

Blond oak cabinet. Do not use oil at all – even non-oil detergent or wax can cause discoloration of the untreated surface. The removal of dark spots should be left to an expert.



Tape recorder. Weak and distorted reproduction of tape cassettes, especially on high notes, is an indication that tape and erase heads need cleaning. Especially during recording it is important that the head fronts, which are pressed against the tape, are kept free of dust and dirt. Once a recording has failed nothing can be done to improve it. At proper intervals, and in any case before any important recording, the heads should be cleaned with one of the fluids that are commercially available for this purpose. Avoid methylated spirits; it may contain substances that attack plastics and rubber.
With the cassette holder open, and without a tape cassette inserted, rub the two heads with a wad of cotton wrapped around a match and soaked in cleaning fluid.

SERVICE AND GUARANTEE

If a defect arises in the set, both during the guarantee period and after its expiry, you should contact your dealer.

TECHNICAL DATA **Subject to change without notice**

Amplifier	**Measured with bass and treble set for linear response**		**DIN 45 500 Requirements, page 6, ampl.**	**BEOCENTER 1400 type 2604**
Power Output	1000 Hz, at specified distortion (see Harmonic Distortion)	RMS Music	2 X 6 watts None	2 X 20 watts/4 ohms 2 X 19 watts/8 ohms 2 X 40 watts/4ohms 2 X 25 watts/8 ohms
Speaker Impedance	Nominal		4 or 8 ohms	4 ohms
Harmonic Distortion	DIN 45 500 at 50 mW output 1000 Hz			<0.1 %
	DIN 45 500 at rated output 1000 Hz		≦ 1 %	<0.5 %
Intermodulation	DIN 45 500, page 6		≦3 %	<1.0 %
Frequency Response	DIN 45 500, ± 1.5 dB		40 - 16,000 Hz	20 - 30,000 Hz
Power Bandwidth	DIN 45 500, 1 % distortion		40 - 12,500 Hz	10 - 35,000 Hz
Damping Factor	DIN 45 500, 1000 Hz		≧3	>12
Inputs	Sensitivity at specified output, 1000 Hz	Pickup low impedance Tape recorder	≦5 mV/≧47 kohm ≦500 mV/≧470 kohm	2.5 mV/47 kohm 150 mV/470 kohm
Signal-to-noise ratio	DIN 45 500 50 mW output	Pickup low impedance Load impedance 1.2 kohm Tape recorder Load impedance 4.7 kohm	≧50 dB	>50 dB >55 dB
	At specified output, linear measurement	Pickup low impecance Load impedance 1.2 kohm Tape recorder Load impedance 4.7 kohm	None	>55 dB <65 dB
Channel Separation	DIN 45 500 Between channels all inputs Load impedance: Pickup, low impedance 1.2 kohm, other inputs 4.7 kohm	1000 Hz and 250 - 10,000 Hz	≧40 dB ≧ 30 dB	>50 dB >45 dB
	DIN 45 500. Between inputs, load impedance: Pickup, low impedance 1.2 kohm, other inputs 4.7 kohm	1000 Hz and 250 - 10,000 Hz	≧ 50 dB ≧ 40 dB	>60 dB >55 dB
Outputs	DIN 45 500. Signal voltage at specified input voltage, 1000 Hz	Tape recorder	0.1 - 2 mV per 1 kohm load impedance (1 - 50 kohm)	25 mV at 40 kohm output impedance
	Headphones			max. 8 V/100 ohms
Bass Control	Measured at 40 Hz		None	± 17 dB
Treble Control	Measured at 12,500 Hz		None	± 14 dB

FM Tuner	**Measured at 94 MHz, modulation, 1000 Hz**	**DIN 45 500 Requirements, page 2, FM Tuners**	**BEOCENTER 1400 type 2604**
Range		None	87.5 - 104 MHz
Sensitivity	26 dB signal-to-noise ratio deviation 40 kHz IEC filter curve 123/A	None	$<$1.8 µV at 75 ohms
	30 dB signal-to-noise ratio IHF	None	$<$2.5 µV at 75 ohms
Limiting	– 3 dB, deviation 40 kHz	None	$<$1.5 µV at 75 ohms
Signal-to-noise Ratio	DIN 45 500, page 2	$\geqq$ 54 dB	$>$65 dB
Selectivity	IHF ± 400 kHz		$>$55 dB
Frequency Range	DIN 45 500 ± 1.5 dB, pre-emphasis 50 µS	50 - 6,500 Hz	20 - 15,000 Hz
Harmonic Distortion	DIN 45 500	$\leqq$ 2 %	$<$0,6 %
Stereo Channel Separation	DIN 45 500, page 2, measured at 1000 Hz Deviation 40 kHz	$\geqq$ 26 dB	$>$30 dB
Pilot and Carrier Suppression	DIN 45 500, page 2 19 kHz 38 kHz	$\geqq$ 20 dB $\geqq$ 30 dB	$>$35 dB $>$35 dB

AM Tuner	**All measurements, except sensitivity, are made at 1 MHz, modulation 1000 Hz**		
Ranges	LW MW		147 - 350 Hz 520 - 1610 kHz
Sensitivity	10 dB signal-to-noise ratio, IEC LW 200 kHz MW 1000 kHz		15 µV 20 µV
Image Rejection	IEC		40 dB
IF Rejection	IEC		65 dB
Bandwidth	3 dB		4.5 kHz
Signal Handling Capability	IEC		500 mV

Other Data			
Power Supply	AC Frequency Power Consumption		110 - 130 - 220 - 240 V 50 Hz 15 - 120 watts
Dimensions	H X W X D		8.5 X 66 X 26 cm
Weight			8.6 kg

Tape transport		**BEOCENTER 1400 type 2604**
Wow and flutter	DIN playback	<0.35 %
	JIS Standard (WRMS)	<0.28 %
Speed deviation	DIN	<1.5 %
Fast tape motion	Compact Cassette C 60	90 sec.

Record/playback data			
Frequency range	DIN	Low noise Chromic dioxide	40 - 8,000 Hz 40 - 12,500 Hz
Signal-to-noise ratio	DIN weighted	Low noise Chromic dioxide	>50 dB >50 dB
Equalizing			DIN 45 500 1971
Erasure	DIN		>60 dB
Erase frequency			70 kHz

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